Abstract

The following document describes bachelor's thesis on "User interface for graphic tablet interactions for contouring of structures and selected abnormalities in medical images". Authors' goal was to create a digital tool that allows to manually draw and semi-automatically generate contours of anatomical structures and lesions on medical images. This tool can be used by medical doctors for diagnostic purposes and by medical engineers for scientific purposes. The topics discussed include: DICOM standard, analysis of state-of-the-art systems and tools used for viewing and creating contours on DICOM medical images, system's architecture and experiments conducted simultaneously with the creation of the tool.

The architecture used enables simultaneous use of the tool by many users. Manual contour module had mainly been implemented in part connected with user interface. Semi-automatic contour module is based on the algorithm developed for the purpose of generating contours, that uses Canny's Operator and the algorithm searching for the shortest path in the graph. Additionally statistics module was added which allows to calculate basic statistical measurements, describing contoured regions of interest in the images.

Keywords: user interface, graphics tablet, medical images, DICOM, contour, statistics of image data, IT system, REST API interface, edge detection, contour generation